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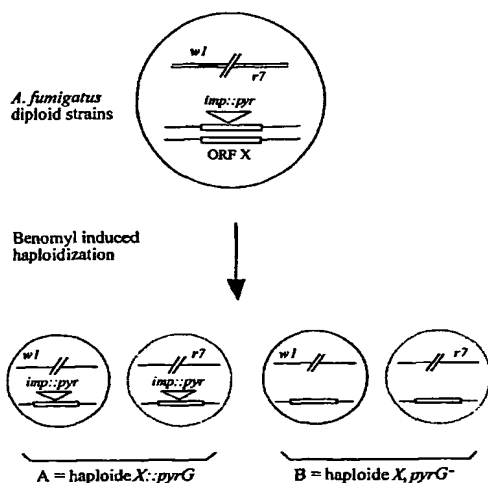
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UZ, VC, VN, YU, ZA, ZM, ZW.

[Continued on next page]

(54) Title: MUTAGENESIS OF ASPERGILLUS FUNGI AND IDENTIFICATION OF GENES ESSENTIAL FOR GROWTH

(57) Abstract: The present invention is directed to polynu-
cleotides encoding proteins Essential For the Growth (EFG)
of filaments fungi. The invention also deals with namely
polypeptides encoded by said polynucleotides, screening assays
for identifying compounds capable of inhibiting said EFG
proteins activities pharmaceutical or phytosanitary compositions
comprising such compounds.

ORF X	Haploid strains	Non selective haploidization	Selective haploidization
Essential gene	A	-	-
	B	+	-
Non essential gene	A	+	+
	B	+	-

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(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations
- of inventorship (Rule 4.17(iv)) for US only

Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/IB 03/01374

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C07K14/38 A61K38/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C07K C12R

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, BIOSIS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	WO 02 086090 A (LEMIEUX SEBASTIEN M ; HU WENQI (CA); JIANG BO (CA); EROSHKIN ALEXEY) 31 October 2002 (2002-10-31) (ELITRA PHARM INC.) "Identification of essential genes of Aspergillus fumigatus and methods of use" abstract	1-13
P,X	* protein #836, gene #3244 * - & DATABASE GSP [Online] EBI; 31 October 2002 (2002-10-31) JIANG ET AL.: "Aspergillus fumigatus essential gene protein #836" Database accession no. ABJ26178 XP002252046 the whole document --- -/--	1-13

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the international search

22 August 2003

Date of mailing of the international search report

28.10.03

Name and mailing address of the ISA

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/IB 03/01374

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	<p>DATABASE SWALL [Online] EBI; 27 June 2002 (2002-06-27) HARRIS ET AL.: "Putative ATP-dependent RNA helicase (Aspergillus fumigatus BAC AFA12F2)" Database accession no. Q8NJM2 XP002252029 the whole document</p>	1-13
P,X	<p>----</p> <p>FIRON ARNAUD ET AL: "Characterization of essential genes by parasexual genetics in the human fungal pathogen Aspergillus fumigatus: Impact of genomic rearrangements associated with electroporation of DNA." GENETICS, vol. 161, no. 3, July 2002 (2002-07), pages 1077-1087, XP002252027 ISSN: 0016-6731 abstract page 1077, left-hand column, line 1 -page 1078, right-hand column, paragraph 2</p>	14-26
A	<p>----</p> <p>TIMBERLAKE W E: "CLONING AND ANALYSIS OF FUNGAL GENES" MORE GENE MANIPULATIONS IN FUNGI, XX, XX, 1991, pages 51-85, XP002910123 the whole document</p>	1-26
A	<p>----</p> <p>GROLL ANDREAS H ET AL: "Emerging targets for the development of novel antifungal therapeutics." TRENDS IN MICROBIOLOGY, vol. 6, no. 3, March 1998 (1998-03), pages 117-124, XP002252028 ISSN: 0966-842X the whole document</p> <p>-----</p>	1-26

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB 03/01374

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☒ Claims Nos.: 27-29
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
see FURTHER INFORMATION sheet PCT/ISA/210
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-26 partially

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-26 (partially)

Claims relating to a putative ATP-dependent RNA helicase from *Aspergillus fumigatus*. Polypeptide comprising an amino acid sequence as in SEQ ID NO:3 and subject-matter relating thereto. Polynucleotides encoding the polypeptide of SEQ ID NO:3 such as a polynucleotide comprising a polynucleotide sequence as in SEQ ID NO:1 or SEQ ID NO:2 and subject-matter relating thereto.

2. Claims: 1-26 (partially)

Inventions 2-21:

Claims relating to 20 other EFG proteins and coding DNAs from *Aspergillus fumigatus* as depicted in Table 1 and Table 1 bis of the application.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.2

Claims Nos.: 27-29

Present claims 27-29 relate to a composition comprising products defined by a parameter or property, namely the ability to bind to the claimed molecules or act either agonistically or antagonistically. The use of this parameter in the present context is considered to lead to a lack of clarity within the meaning of Article 6 PCT. It is impossible to compare the parameters the applicant has chosen to employ with what is set out in the prior art. The lack of clarity is such as to render a meaningful complete search impossible.

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/IB 03/01374

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 02086090 A	31-10-2002	WO 02086090 A2	31-10-2002
		US 2003119013 A1	26-06-2003
